

R E M A R K S

Re-examination and favorable reconsideration in light of the above amendments and the following comments are respectfully requested.

Claims 28, 32, 33, 35-48, 50, and 53-70 are pending in the application. Currently, all claims stand allowed. By the present amendment, claim 55 has been cancelled and its subject matter has been incorporated into claim 54.

In the office action mailed April 23, 2002, the Examiner objected to the drawings on the grounds that it was not clear how the steam or gas will communicate with holes 21 found in the corrugated sections. Applicant notes however that there is no corresponding objection or rejection under 35 U.S.C. 112, first paragraph as to how the invention operates. Consequently, the drawing objection appears to be inappropriate since one can understand how the steam or gas will communicate with the holes 21 by reading the specification. The Examiner is respectfully requested to withdraw the drawing objection.

Further in said office action, claim 54 was rejected under 35 U.S.C. 112, second paragraph as being indefinite. It is submitted that the rejection has been obviated by the amendment to claim 54.

Still further in the office action, claims 28, 32, 33, 35-48, 50, and 53-70 were rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admissions in view of Kruger et al. (U.S. Patent No. 4,550,029) and further in view of Perry's Chemical Engineering Handbook (pages 18-19 to 18-37). Applicant submits that the obviousness rejection made by the Examiner is not well founded.

In making the rejection on obviousness grounds, the Examiner contends that Applicant admits the well known processing of beer wort to remove unwanted volatile flavors as known in the art. The Examiner however notes that Applicant does not disclose the specifically claimed apparatus. It is also true that this alleged admission does not disclose the specifically claimed method to be old. In Applicant's opinion, the rejection is fatally defective since the Examiner is relying on the alleged admission on page 1 as the primary element in the rejection and that element has nothing to do with the claimed invention. For this reason alone, the Examiner should remove the rejection.

With respect to Kruger et al., Kruger et al. teaches that an absorption method of eliminating volatile components from a wort (column 2, line 7). Kruger et al. also teach the formation of vapor bubbles which provide an

advantageous movement of the wort (see column 2, lines 6 and 7). In column 3, lines 21-26, Kruger et al. teach that the steam flows intensively through the wort and causes considerable movement of the wort and an intensive formation of vapor bubbles (see also claim 1, column 4, lines 43 and 44 of Kruger et al.). Kruger et al., while disclosing a multistage column device, does not disclose many of the features of the claimed device and method. For example, there is no disclosure of a corrugated bottom plate with at least 90% of its area being orifices, the claimed chimneys, etc.

The Perry citation teaches that packed columns for gas - liquid contacting are used extensively for absorption operation and to a limited extent for distillation. Accordingly, Perry's teachings would dissuade one skilled in the art from using a column such as Kruger et al.'s. Perry notes that the packed columns are usually specified when plate devices would not be feasible. In the same paragraph of Perry, condition 4 favoring packed columns says that liquids tending to form may be handled more readily in packed columns because of the relatively low degree of liquid agitation by the gas. This is in contradiction with the teachings of Kruger et al. which recommend intensive movement of the wort.

Among the conditions unfavorable to packed columns, condition 1 says that "if solids are present in the liquid or gas, plate columns can be designed to permit easier cleaning". As wort contains solids in suspension, Perry would dissuade using a packed column for wort treatment. Conditions 3, 5, and 6 in Perry teach away from using a packed column for elimination of undesired volatile components from hot beer wort. Clearly, it can be seen that one of ordinary skill in the art would not be inclined to combine Kruger et al. and Perry as suggested by the Examiner. Perry does not overcome the deficiencies of Kruger et al. with respect to the claimed device limitations and the claimed method steps.

Further, the Examiner has not pointed out specifically in the rejection where one of ordinary skill in the art can find all the claimed components of the device set forth in claims 28, 32, 33, 36-48, 50, and 53-62 in Perry and/or Kruger et al. Further, the Examiner has not pointed out where each of the method steps in claims 63-65 can be found in the cited and applied references. It is submitted that neither Perry nor Kruger et al. teaches or suggests all of the elements of the claims pending in the instant application. For this reason alone, all of the claims are clearly allowable over these cited and applied references.

Further, with regard to claim 63, it is submitted that neither Kruger et al. nor Perry teaches or suggests the method steps. Kruger et al. recommends intensive movement of the wort caused by intensive vapor bubbling. In contrast to this, the method of claim 63 calls for separating liquid and gas at the level of the upper distribution plate, and distributing uniformly over all of the cross section of the column the liquid in the upper part of the column and the steam or gas in the lower part of the column provides a minimum movement of the wort and, at the same time, unexpectedly and surprisingly, an excellent efficiently of desorption of DMS and other undesired volatile components. Additional features set forth in the claims also decrease movement of the wort, for example the choice of relatively large size filler bodies with a low surface area by volume ratio. As previously mentioned, Perry is contrary to Kruger et al.'s teaching and is of a nature which would dissuade one skilled in the art to consider the method for claim 63 and/or the device of claims 28 or 57 for treating hot beer wort. If the Examiner is to continue the maintenance of this rejection, he is hereby requested to specifically point out where each of the limitation of each of the claims pending in the application can be found in Perry and/or Kruger et al.

With respect to claims 66-70, these claims are believed to be allowable for the same reasons that claim 63 is allowable as well as on their own accord.

With regard to the Examiner's comments in paragraphs 9-15, Applicant will again note that while there is nothing improper in using admissions to formulate a prior art rejection, the admission must contain some aspect of the claimed invention. There is nothing in the alleged admission which teaches or suggests the claimed device for eliminating unwanted volatile components from beer wort and/or the steps set forth in the claimed method of eliminating unwanted volatile components from a beer wort.

With regard to paragraph 10 on page 4 of the office action, Applicant is not restating the logic of the rejection. To be succinct, one of ordinary skill in the art would not modify either Perry or Kruger et al. in the manner suggested by the Examiner. The two are oil and water and simply do not mix.

With regard to paragraph 11, the Examiner's comments do not make any sense in the context of the claimed invention. Applicant is not required to prove that there are actually solids in the wort. The invention relates to a device and a method. The patentability of these claims

relies on the claimed components and the claimed method steps.

With regard to paragraph 12, Applicant will note that it is up to the Examiner to make a *prima facie* case of obviousness and present sufficient information to allow it to be determined where all the claimed method steps can be found in the references.

With regard to the Examiner's comments in paragraphs 13 and 14 on pages 4 and 5 of the office action, Applicant does not find them to be persuasive for the reasons stated above. One of ordinary skill in the art would not find the claimed invention in either Kruger et al. or Perry and would not be inclined to modify either one of these references in light of the other.

It is submitted that the instant application is in condition for allowance. Such allowance is respectfully solicited.

A Notice of Appeal is appended hereto in the event that the Examiner maintains the rejections of record.

Also enclosed herewith is a three (3) month extension of time request and a check in the amount of \$1,240.00 to cover the cost of the three (3) month extension and the Notice of Appeal fee.

Should the Examiner believe an additional amendment is needed to place the case in condition for allowance, he is hereby invited to contact Applicant's attorney at the telephone number listed below.

Should the Commissioner determine that an additional fee is due, he is hereby authorized to charge said fee to Deposit Account No. 02-0184.

Respectfully submitted,

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Date: October 18, 2002

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, DC 20231

on October 18, 2002
(Date of Deposit)

Nicole Motzer

Name and Reg. No. of Attorney



Signature

October 18, 2002

Date of Signature

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MARKED-UP COPY OF AMENDED CLAIM

54. (Amended) Device according to claim 28, wherein said filler bodies are [comprised of large size filler bodies] rings having a diameter of at least 3 to 4 cm.

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CLEAN COPY OF AMENDED CLAIM

54. (Amended) Device according to claim 28, wherein said filler bodies are rings having a diameter of at least 3 to 4 cm.

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MARKED UP COPY OF AMENDED CLAIMS

28. (Twice Amended) Device for eliminating unwanted volatile components from beer wort comprising:

a counter-current contact column for contact between an ascending current of steam or inert gas and a descending current of wort at a temperature substantially equal to the boiling point of said wort at [the] a pressure in the column;

said column containing filler bodies to increase the surface area of contact within the column between the wort and the current of steam or inert gas;

means for feeding and uniformly distributing the beer wort into said column, said feeding and uniformly distributing means being located in a top part of the column and comprising a distribution plate perpendicular to a longitudinal axis of the column, said distribution plate being disposed under a wort feed into said column at the level of the top part of said column, said distribution plate including first means for uniform flow of the wort in the descending direction and second means for flow of said current of inert gas or steam in the ascending direction;

said first means for uniform flow of said wort comprising a plurality of orifices in said distribution plate and the second means for flow of said current of inert gas or steam comprising a plurality of chimneys on a surface of said distribution plate;

said plurality of orifices in said distribution plate being sufficient in number and diameter to allow a predetermined flow rate of said wort, to provide a depth of said wort on top of said plate, and to prevent the passage of steam or inert gas through said orifices [and thereby substantially prevent foaming of the wort at the level of the top part of the column];

means for feeding and uniformly distributing the current of steam or inert gas inside the column, said means for feeding and uniformly distributing the current of steam or inert gas inside the column being located in a bottom part of the column and comprising a bottom plate arranged [substantially] perpendicular to the longitudinal axis of the column: and

said bottom plate comprising a corrugated plate having a corrugated surface, said bottom plate having means for increasing the surface area of contact, said means for increasing the surface area of contact comprising [a number of]

orifices [in said] over all of said corrugated surface of said
bottom plate such that a total surface area through which said
current of inert gas or steam passes upwardly and said current
of wort passes downwardly is equal to at least 90% of a
transverse surface area of the column[so as to substantially
prevent foaming of the wort at the level of said bottom plate].

37. (Twice Amended) Device according to claim 28, wherein the
means for uniform distribution of a current of inert gas or
steam comprises a main pipe disposed at a level of a region from
which the treated wort is extracted, in the bottom part of the
column, and having a plurality of orifices, said orifices being
regularly arranged on the greater part of the main pipe so that
the current of inert gas or [stream] steam can be fed into the
interior of the column over [substantially] all of the cross-
section of said column.

56. (Amended) Device according to claim 28, wherein said filler
bodies are piled up directly above said bottom plate in the
volume between said bottom plate and said distribution plate[,
said volume being free from any rack].

57. (Amended) A device for eliminating unwanted volatile
components from beer wort, said device comprising:

a counter-current contact column;

means for creating a descending column current of wort
within said column;

means for creating an ascending column current of inert gas
or steam within said column;

said wort descending column current creating means
comprising means for feeding and uniformly distributing the beer
wort into said column positioned in a top part of said column,
said beer wort feeding and uniformly distributing means
comprising a distribution plate disposed under a wort feed into
the column;

said distribution plate including first means for uniform
flow of the wort in the descending direction and second means
for flow of said current of inert gas or steam in the ascending
direction;

said means for creating an ascending column of inert gas or
steam comprising means for feeding and uniformly distributing

the current of inert gas or steam in a bottom part of the column;

 said means for feeding and uniformly distributing the current of inert gas comprising a bottom plate having orifices through which the steam or the inert gas pass upwardly;

said bottom plate is a corrugated plate having a corrugated surface and said orifices are over all of said corrugated surface;

 means for collecting the wort after said wort completes its descent, said collecting means being located beneath said bottom plate at a distance thereof such as to prevent formation of foam and including means for avoiding any [significant] formation of foam; and

 means for extracting the collected wort for transmission to at least one of a cooling tank and a fermentation tank.

63. (Amended) A method of eliminating unwanted volatile components from a beer wort in a column by counter current contact between a descending current of heated wort and an

ascending current of heated steam or inert gas at a predetermined internal pressure in said column, comprising:

heating said wort at a temperature substantially equal to the boiling point of said wort at said internal pressure;

separating unwanted volatile components from said wort, said separating step comprising providing a column having a distribution plate at the level of a top part of said column and a bottom plate at the level of a bottom part of said column, which bottom plate is a corrugated bottom plate having a corrugated surface and has orifices over all of said corrugated surface, said orifices providing a free surface area of at least 90% of the cross sectional area of the column;

providing said distribution plate with a plurality of orifices in said distribution plate for uniform flow of said wort in said column, and providing a plurality of chimneys on a top surface of said distribution plate for uniform flow of steam or inert gas in said column;

said separating step further comprising introducing said heated wort into said column above said distribution plate and

feeding and uniformly distributing said current of inert gas or steam in a bottom part of said column below said bottom plate;

passing said wort through said orifices in said distribution plate in a descending direction and at a flow rate which allows a volume of wort to build up on said top surface of said distribution plate, while allowing said steam or inert gas to separately ascend through said chimneys of said distribution plate so as to reduce contact between the wort and the inert gas or steam[, and while avoiding any significant formation of foam at the level of the top part of the column];

creating an ascending current of said inert gas or steam at a temperature substantially equal to that of said heated wort inside the column beneath said bottom plate; and

placing said descending wort flow in contact with said ascending current of said inert gas or steam so as to eliminate said unwanted volatile compounds by flowing said wort through filler bodies directly supported by said bottom plate [while avoiding any significant formation of foam at level of said bottom part of said column and at the level of said filler bodies];

collecting the wort below said bottom plate after said wort
has completed said descent; and

extracting the collected wort.

66. A method according to claim 63, further comprising:

providing at least one inclined surface directed towards the bottom of the column with said at least one surface having means forming a baffle in a bottom part of the column; and

flowing said wort over said at least one inclined surface.

67. A method according to claim 63, wherein said step of providing said distribution plate comprises providing a distribution plate with a metal base, wherein said step of providing said distribution plate with a plurality of orifices comprises providing a plurality of orifices in said metal base sufficient in number and dimensioned to create a particular wort flow rate and to provide a volume of wort on top of said metal base, and wherein said chimney providing step comprises providing chimneys having a height which prevents the volume of wort remaining on top of said base from passing through said chimneys.

68. A method according to claim 63, wherein the flow rate of said inert gas or steam is from about 0.5% to about 3.0% by weight of the flow rate of the wort.

69. A method according to claim 63, further comprising using a filler body having a low exchange surface area per unit volume to reduce wort/steam exchanges.

70. A method according to claim 67, wherein said filler body using step comprises using rings having a diameter of at least 3 to 4 cm.